## REMARKS

### I. Restriction Requirement

A telephone election of claims 19, 20 and 22 to 37, directed to a method, was made previously, and that election is here confirmed.

### II. Prior Art Rejections

Claims 19, 20, and 22 to 28 were rejected under 35 U.S.C. § 103(a) as obvious based on Werdecker (U.S. patent 6,381,987).

Claims 19, 20, and 22 to 37 were also rejected as obvious based on Sat et al. (U.S. patent no. 5,989,021).

### A. Statement of Common Ownership of the Werdecker reference

The invention of application serial number 10/070,847 (the present application) and the subject matter of U.S. patent 6,381,987 to Werdecker et al. were, at the time the invention of the present application was made, owned by Heraeus Quarzglas GmbH & Co. KG.

35 U.S.C. § 103(c) provides:

> Subject matter developed by another person, which qualifies as prior art only under one or more of subsections (e), (f), and (g) of section 102 of this title, shall not preclude patentability under this section *where the subject matter and the claimed invention were, at the time the invention was made,* owned by the same person *or subject to an obligation of assignment to the same person.* [emphasis added]

The present application is a U.S. national stage of PCT application PCT/EP01/07858, which was filed on July 9, 2001 and designated the United States of America. Pursuant to 35 U.S.C. 363, the effective U.S. filing date of this application is therefore July 9, 2001.

The Werdecker patent issued on May 7, 2002 (after the effective U.S. filing date of the present application) based on an application filed in the U.S. Patent and Trademark Office on January 14, 2000 (before the filing date of the present application). It is therefore understood that Werdecker is being cited as a reference only under 35 U.S.C. § 102(e), triggering applicability of § 103(c).

The Werdecker reference consequently cannot be the basis of an obviousness rejection under § 103(a). Withdrawal of the obviousness rejections based on Werdecker is therefore respectfully requested.

**B. Rejections based on the Sato reference**

All claims have been rejected as obvious based on Sato et al. reconsideration of that rejection is respectfully requested.

Claim 1 as amended recites a process for producing a rotationally symmetrical quartz glass crucible. The process comprises creating an electric arc by means of an electrode arrangement comprising one or several anodes and a cathode so as to heat a wall section of the quartz glass crucible as it is rotated about a rotational axis, and creating an additional electric arc heating an additional wall section of the quartz glass crucible by means of at least one additional electrode arrangement comprising one or more anodes and a cathode. The electrode arrangements and their respective heating zones are spaced from each other in relation to a periphery of the quartz glass crucible.

The spacing of the electrode arrangements and their heating zones from each other in relation to the periphery of the crucible provides for a shorter cooling phase for a point on the wall of the rotating crucible between heatings by the electrode arrangements. See specification, page 3, lines 9-12. As a result, the temperature of the crucible wall does not vary as much as in the prior art, and electrode arrangements can be operated at a reduced heat output. See specification, page 3, lines 9 to 12, page 4, lines 14-17. This results in a reduction in the vaporization that occurs when the heat output is higher, as well as a reduction in the formation of bubbles, and more efficient and faster deposition of the $SiO_2$ particles. See specification, page 4, line 17 to page 5, line 1.

Sato teaches a method of making a crucible in which a single electrode arrangement 51 and 52 is used for heating as the crucible is built up. Sato represents the single electrode arrangement prior art, the problems of which are discussed in the specification of the present application at, e.g., page 2, lines 10 to 18. Essentially, use of a single electrode arrangement means that the heat output of the electrode must be higher and this results in a deterioration of the deposition process, because it causes vaporization, loss, and slower deposition of the $SiO_2$ material, and bubbles in the crucible. Sato tries to reduce the bubbles by a different method, i.e., by applying a vacuum to the crucible through gas suction paths 1b. See Sato, Fig. 1, see also col. 5, lines 17 to 21.

Sato fails to suggest a method in using at least two electrode arrangements with heating zones spaced relative to the periphery of the crucible, which provides improved temperature homogeneity, and allows for lower heat output from the electrode arrangements, less vaporization, faster deposition, and less bubble formation.

The Examiner has cited In re Harza, 274 F.2d 669; 47 C.C.P.A. 771; 124 U.S.P.Q. 378 (C.C.P.A. 1960) to stand for the general principle that the "mere duplication of parts" has no patentable significance unless a new and unexpected result is produced.

That principle is correctly stated; however, it is irrelevant here, because claim 19 as here amended does not reflect a "mere duplication" of parts. Rather, in addition to simply reciting a second electrode arrangement, claim 19 recites a significant interrelationship between the electrode arrangements, specifically that the electrode arrangements and their respective heating zones *are spaced from each other in relation to a periphery of the quartz glass crucible.* This interrelationship between the electrode arrangements is not found or suggested by the Sato et al single electrode arrangement system, and the claimed combination cannot be simply dismissed as "mere duplication of parts".

That is the holding of In re Harza, as well. In that case, the court affirmed the rejection of a claim (claim 1 therein) that merely recited a water seal comprising a plurality of ribs, where the prior art reference contained a single rib as recited in the claim. See 274 F.2d at 671. The court also affirmed rejections of claims that recited the ribs having structure that was present in the single rib of the prior art reference. **However,** the court also *allowed* claims 7, 8, 9, 10 and 11, which were claims that recited an additional dimension and spatial relationship of the ribs that produced "new and nonobvious results which are not suggested by any combination of the references." The court stated:

> We do not agree with the board's affirmance of the rejection of claim 7. In this claim there exists an element which is neither disclosed in Gardner nor in Gardner in view of Roberts and Schurman, and two combinations of elements which are not suggested by any combination of the references. We refer to the feature of "each rib being substantially as high as the spacing between adjacent ribs." This is novel, and its utility, as expressed by the

applicant, is apparent. Further, the combination of that element and the element defined by the recitation of "the ribs on said opposite faces being laterally spaced in offset relation" is patentably distinguishable from the references. Although Roberts shows the offset positioning claimed, we believe **the offsetting in combination with the claimed dimensional relationship of the ribs produces new and unobvious results which are not suggested by any combination of the references**. The other combination recited in this claim which we believe patentable consists of the feature of "a plurality of parallel ribs in spaced relation to one another on each of said faces" and the element of the ribs on opposite sides being spaced in offset relation. **Even though we found in considering claim 1, that the plurality of ribs is not patentable per se and have stated that Roberts shows the offsetting of the ribs, we believe the two features taken together create a patentable combination**.

In re Harza, supra, 274 F.2d 671-672. [emphasis supplied]

Applying the rationale of In re Harza to the present case, there is no question that claim 19 is allowable. The recited method of Claim 19 includes a description of an interrelationship of the electrode arrangements that is not suggested, or even possible, in the single electrode arrangement of Sato. The consequence of this recited interrelationship of the electrode arrangements is an improved method, as set out above. The results of efficiency and quality of product of the method are "a new and nonobvious result" over Sato.

The claimed process therefore does not constitute a "mere duplication of parts", and, the cited holding of In re Harza in fact requires allowance of claim 19.

Claims 22 to 37 depend directly or indirectly from claim 19, and therefore distinguish therewith over the prior art. These claims have been here amended to improve their syntax and clarity, and formal allowance of these claims, with claim 19, is respectfully requested.

**C. New claims added by this amendment**

New independent claim 38 and depending claims 39 to 44 have been added by this amendment.

Claim 38 recites a process for producing a rotationally symmetrical quartz glass crucible. The process comprises creating electric arcs by means of a plurality of electrode arrangements. Each electrode arrangement comprises a cathode and one or more anodes, and heats in a respective heating zone a wall of the quartz glass crucible while it is rotated about a rotational axis thereof. The heating zones of the electrode arrangements are spaced from each other in relation to a periphery of the quartz glass crucible.

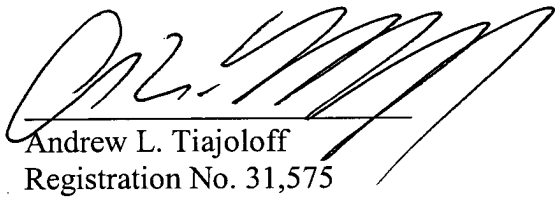
Claim 38 recites a method using a plurality of electrode arrangements with heating zones spaced from each other. This method provides benefits like those described above with respect to claim 19. for reasons similar to those expressed above regarding claim 19, claim 38 distinguishes over the prior art, especially Sato et al.

Claims 39 to 44 depend from claim 38 and therefore distinguish over the prior art with claim 38.

All claims herein having been shown to distinguish over the prior art in structure function and result, formal allowance is respectfully solicited.

Should any questions arise, the Examiner is invited to telephone attorney for applicants at 212-490-3285.

Respectfully submitted,



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